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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/888,084 | 06/21/2001 | Whonchee Lee | 108298515US1 | 8101 |

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EXAMINER

NGUYEN, DUNG V

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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3723

DATE MAILED: 06/13/2003

1'2

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/888,084

Applicant(s)

LEE ET AL.

Examiner

Dung V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-121 is/are pending in the application.
- 4a) Of the above claim(s) 16,90-107 and 114 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-32,40-46 and 84-89 is/are allowed.
- 6) ☒ Claim(s) 1-8,10-13,15,19-21,33,34,36-39,47-63,65,67-83,108-113,115,116,119 and 121 is/are rejected.
- 7) ☒ Claim(s) 9,14,17,18,35,64,66,117,118 and 120 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,6,7,9 & 11 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 16, 90-107 and 114 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 47-57 and 108-113 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "greater" in claim 47 and term "less" in claim 108 are a relative terms which renders the claim indefinite. The term "greater" and "less" are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It's unclear about a degree of a first rate in claim 47 and a first force in claim 108, therefore, the degree of a second rate and second force is undeterminable, thereby rendering the scope of the claim(s) unascertainable.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 5-8, 12, 13, 15, 19-21, 33, 34, 36, 38, 39, 47-51, 55-63, 65, 67-83,

108-113, 115, 116, 119 and 120, as best understood, are rejected under 35

U.S.C. 102(e) as being anticipated by Weihs et al (USPN 6,171,467). Weihs et al

disclose a method for removing material from a face surface of a microelectronic

substrate comprising engaging the microelectronic substrate 5 with a polishing surface

of a polishing pad 9, electrically coupling a conductive material of the microelectronic to

a source of electrical potential by positioning first and second electrodes 2 and 3

proximate to and spaced apart from the face surface of the microelectronic substrate 5

and disposing an electrolytic fluid 10 between the face surface and the electrodes 2 and

3 which the face surface is engaged with the polishing surface of the polishing pad 9,

with both the electrodes 2 and 3 in fluid communication with each other and the

electrolytic fluid 10, oxidizing at least a portion of the conductive material by passing an

electrical current through the conductive material from the source of electrical potential

1, removing the portion of the conductive material from the microelectronic substrate 5

by moving at least one of the microelectronic substrate 5 and the polishing pad 9

relative to the other, facing both the first and second electrodes toward the face of the

microelectronic substrate 5, with one of the electrodes defining an anode and the other

electrode defining a cathode, passing an electrical current at a potential of up to at least

about 100 volts, controlling an oxidation rate of the conductive material by controlling

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characteristics of the electrical current passing through the conductive material, halting removal of the conductive material from the microelectronic substrate by halting a flow of electrical current through the conductive material, selecting the conductive material to include metal, copper, tantalum, tungsten, semiconductor (note Fig. 4 and 5, col. 3, line 11 to col. 5, line 3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weihs et al (USPN 6,171,467). Weihs et al disclose the claimed invention as described above, however, Weihs et al do not disclose an electrical current of from about 1 amp to about 10 amps. It would have been obvious to one having ordinary skill in the art at the time the invention was made to pass a current of from about 1 amp to about 10 amps, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

9. Claims 10, 11, 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weihs et al (USPN 6,171,467) in view of Chopra (USPN 6,039,633). Weihs et al disclose the claimed invention as described above, however, Weihs et al do not disclose the polishing pad including a plurality of abrasive element fixedly attached

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to the polishing pad and electrolytic fluid including a plurality of suspended abrasive element. Chopra disclose a polishing pad including a plurality of abrasive element fixedly attached to the polishing pad and electrolytic fluid including a plurality of suspended abrasive element (note col. 1, lines 35-49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the polishing pad and fluid as disclosed by Chopra with the method of Weihs et al in order to produce a uniform planar surface on a semiconductor substrate as quickly as possible.

Allowable Subject Matter

10. Claims 22-32, 47-57 and 84-89 are allowed.
11. Claims 9, 17, 18, 64, 66, 117, 118 and 120 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
12. The following is a statement of reasons for the indication of allowable subject matter: prior art of record fails to disclose or imply a method of removing material from a face surface of a microelectronic substrate comprising a step of disposing a liquid adjacent to a polishing surface of a polishing pad, the liquid including at least one of $(\text{NH}_4)_2\text{SO}_4$, K_2SO_4 , H_2SO_4 , MgSO_4 , H_3PO_4 , and ammonium citrate, or controlling a pH in environment adjacent to a conductive material from about 1 to about 14 when the conductive material includes platinum, less than about 3 or greater than about 4 when the conductive material includes tungsten, and less than about 6 or greater than about 8 when the conductive material includes copper, or exposing a microelectronic substrate

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to a liquid having a concentration of chlorine ions of from about 50 ppm to about 5,000 ppm, as specifically recited by applicant's respective claims.

Conclusion

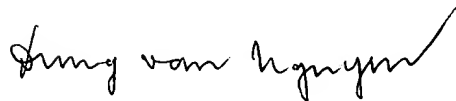
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung V Nguyen whose telephone number is 703-305-0036. The examiner can normally be reached on M-F, 6:30-3:00.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail can be reached on 703-308-2687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

15. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

DVN

June 12, 2003



Dung Van Nguyen
Patent Examiner